

the current problems in the Middle East, would they have converted from coal-burning ships much later? A lesson for today's reader is that there can be far-reaching and unknown effects from the introduction of new technology in developing nations and world regions.

NEWS BRIEFS

Army Fields New 80-Passenger "Troop Hauler"

A new Army system for transporting soldiers to and from training sites was developed and placed in the field last year. The new system, called the "Troop Hauler," is replacing the outdated vehicles formerly used to transport troops to training sites.

Development of the new transportation system was a coordinated effort by the

U.S. Army Training and Doctrine Command, the U.S. Army Tank-automotive and Armaments Command (TACOM) and the

General Services Administration. The system, a nontactical vehicle, is managed by TACOM's Materiel Support Group. Lifeline Shelter Systems of Columbus, OH, built the vehicles.

The system consists of an 80-passenger semitrailer van and a truck tractor. The unit has rucksack storage space, air conditioning and heating, a two-way communication system between the truck driver and the drill instructor in the van, egress windows, interior lighting, escape hatches in the roof and several other key safety features.

When developing the new transportation system, both safety and durability were priorities. Safe troop movement was a top

priority as well as a necessity. The new system will eliminate using outdated vehicles or commercial buses that are not really suited for moving troops and their equipment. In the past, transporting 80 troops would have required using two 44-passenger buses. Some of the troop haulers are now being used 24/7 to more safely and economically move troops from one site to another.

New troop haulers were fielded at Fort Leonard Wood, MO; Fort Sill, OK; and Fort Benning, GA. Fort Leonard Wood received the prototype model in June 2001. Since then, and after a few modifications, 10 additional units were fielded. The feedback regarding troop-hauler performance is that it outperforms anything previously used to transport troops. System performance on rough installation roads or on highways at top speeds of 65 mph has been effective and problem-free.

The Army plans to procure and field additional units in FY04.

The preceding article was submitted by Rosalie Velthoven, a Materiel Support Group member who is a Level III certified Weapon System Manager.

Heaping on Heat

Heating tents safely, effectively and efficiently is now much simpler thanks to the Family of Space Heaters (FOSH) developed by Product Manager Force Sustainment Systems located at the U.S. Army Soldier Systems Center, Natick, MA.

FOSH uses the latest advances in combustion, power-generation and microprocessor technology to provide comfort and protection for soldiers, supplies and equipment in tents during field cold-weather operations. It replaces the old World War II-era M-1941 "pot belly" and M-1950 "Yukon" heaters and eliminates the serious operational deficiencies and safety hazards associated with these antiquated systems.

While many seemingly attractive commercial space heaters are available in today's marketplace, they are unacceptable from a safety, performance and economic perspective. Military units are urged to replace their stock of these heaters with standard vented military heaters. Commercial unvented kerosene or propane-fueled heaters that release exhaust directly into the living space present a serious risk of injury or death to soldiers and should never be used.



Kerosene heaters “are intrinsically dangerous and should not be used in field environments,” according to the U.S. Army Center for Health Promotion and Preventative Medicine. Army Regulation 420-90, *Fire and Emergency Services*, restricts the use of unvented space heaters in living quarters or enclosed locations where soldiers sleep, and the U.S. Army Safety Center also advises commanders not to allow soldiers to use these heaters where they work or sleep.

Besides safety hazards, commercial heaters do not meet military requirements that FOSH satisfies. Some of FOSH’s key capabilities include:

- Operates without electrical power.
- Operates using multifuels such as diesel, JP-8, JP-5, kerosene, wood or coal.
- Efficient, clean-burning combustion requiring little maintenance.
- Operates in temperatures down to -60 degrees F.
- Self-contained, lightweight, portable, rugged and simple to operate.
- Vents exhaust outside the tent.
- Meets heating requirements for all standard military tentage.

FOSH consists of the space heater small (SHS), space heater medium (SHM) or H45, space heater Arctic (SHA) and space heater convective (SHC). The SHM, SHA and SHS are nonpowered radiant heaters that operate inside the tent, and the SHC is a self-powered convective heater that operates outside the tent. The thermoelectric fan is a FOSH accessory used with the SHM and SHA heaters to circulate heated air inside the tent.

The SHM, SHA and SHS heat through radiation and natural convection. They use a newly developed vaporizing burner tube technology that overcomes major combustion and safety problems plaguing the nonpowered heater industry during the past 50 years. In the old heaters, fuel would pool in the bottom of the burner to be vaporized and burned. If fuel entered faster than it could be vaporized, the burner would flood and the operator would end up with a “runaway” heater.

The patented burner design vaporizes all fuel within the confines of a tube and eliminates the pooling of raw fuel during operation and the possibility of flooding the pot. It also provides a multistage liquid-to-vapor combustion process that results in much cleaner, more efficient combustion requiring much less burner maintenance.

A patented multifuel control valve is incorporated into each heater. This valve compensates for dissimilar fuel viscosities and maintains a consistent flow rate among the various types of liquid fuels and temperatures encountered in field operations. The addition of a sight glass also allows the operator to view the flame and heater operation without the need to open the lid.

The SHC is the most advanced of the four heaters. It is a self-powered, thermoelectric heater that provides forced hot-air circulation without external power normally supplied by a field generator. The SHC generates its own electrical power, without any moving parts, through thermoelectric modules located in the combustion chamber that convert waste heat into electricity. The internal generation of electrical power gives the SHC the extra capabilities of single-switch operation, completely automatic safety and temperature controls, operation without the need for a fire guard and significantly higher combustion efficiencies — all without an external power supply. To troubleshoot, the SHC comes equipped with a remote intelligent control box that tells the operator when there’s a problem and how to fix it. All fielded FOSH units are available through the Defense Supply Center Philadelphia.

For more information about FOSH or the Soldier Systems Center, go to <http://www.natick.army.mil>.

PM DMS Receives Defense Acquisition Executive Recognition

A team from the Product Manager Defense Message System-Army (PM DMS-A) received the Defense Acquisition Executive Certificate of Achievement (DAE) — the highest acquisition award presented to Army organizations — during the Acquisition Senior Leaders’ Conference in Seattle, WA, Aug. 14, 2003.

Assistant Secretary of the Army for Acquisition, Logistics and Technology Claude M. Bolton Jr. presented the certificate to Cathy Doolos, former PM DMS-A, who is currently the Deputy Project Manager Enterprise Infostructure, Program Executive Office for Enterprise Information Systems (PEO EIS). The PM DMS-A reports to the Project Manager Enterprise Infostructure.

The PM DMS-A team received the certificate in the Program Management category for the radical redesign of the



The PM DMS-TMS team shown from left to right: Bill Stapleton, LTC Paul Haffey, Cathy Doolos and MAJ Pedro Passapera. (Photo by Bob Fowler)

Army's Tactical Message System (TMS), taking it from concept through test in just 6 months and saving the Army more than \$85 million in life-cycle costs as TMS gets fielded throughout the Army.

According to MAJ Pedro Passapera, PM DMS-A's Assistant PM-Tactical, the redesign was indeed radical, trimming the system from nearly 7,200 pounds of equipment in 9 transit cases — including extensive cabling “the size of a tree trunk” and complex servers and routers — down to a simple design that weighs 240 pounds and employs only 3 ruggedized laptops as servers and one router — all contained in 3 transit cases.

“Before, we had to modify a High Mobility Multipurpose Wheeled Vehicle (HMMWV) to transport the TMS,” said Passapera. “We went from a lot of nice-to-have equipment down to the essential equipment that was really needed to get the mission done.”

According to Bill Stapleton, PM DMS-A Technical Management Division Chief, the redesign was the latest in an ongoing product improvement process that began when TMS was a prototype in the early 1990s and weighed in at a whopping 16,380 pounds.

“Soldiers can unload the new TMS from a HMMWV and have it up and running in less than 30 minutes,” said Stapleton. With TMS, he said, the Army can extend the same DMS services used in garrison, including e-mail-based writer-to-reader messaging based on Public Key Infrastructure signed and encrypted message technology, to deployed units. “TMS provides that seamless integration,” said Stapleton.

Passapera added that the TMS program's success was achieved as a result of the teamwork between PM DMS-A and its Army and industry partners — the U.S. Army Information Systems Engineering Command/Information Assurance Security and Engineering Directorate, the U.S. Army

Signal Center, Vitronics, Maddentech, Electronic Warfare Associates, Titan and Data Systems Analysts. “They have all provided great support and contributed to the team effort,” said Passapera.

Other Army teams that received the DAE Certificate of Achievement were the Product Management Office for Telecommunications Systems of PEO EIS, which received two certificates. They received one for greatly contributing to the successful restoration of the Pentagon information technology infrastructure in the aftermath of 9-11 and the other in the Program Management category. The M45 Chemical Biological Mask Team of the Joint Program Executive Office, Chemical and Biological Defense, was recognized in the Program Management category for incorporating new technologies to improve the mask and reduce life-cycle costs by more than \$2.6 million. The Armament Retooling and Manufacturing Support team was recognized in the Industrial Property Management category for employing innovative acquisition reform policies to save the Army approximately \$40 million by attracting commercial tenants into Army Acquisition Plants, lowering facilities' disposal costs, creating and sustaining more than 3,000 jobs and providing approximately \$395 million in economic impact to local communities.

Natick Offers Local High School Students Better Summer Jobs

The Science and Engineering Apprentice Program (SEAP) is a DOD-sponsored program designed to provide local area high school students the opportunity to gain valuable experience and exposure to scientific research and engineering. SEAP allows students to work with a senior scientist or engineer who acts as a mentor for eight continuous weeks during the summer. Each apprentice completes a science or engineering project under the mentor's direction. Students are then required to submit a research paper to The George Washington University based on their experience in the program.

The Soldier System Center, Natick, MA, has been participating in this program for 13 years. SEAP is a contractual program administered by The George Washington University. Each student receives a stipend in the amount of \$1,450.

In 2003, Natick had eight new students and two returning students from the previous year. Over the years, many students who have participated developed long-term mentoring

relationships with scientists that still exist today. Another important SEAP program benefit is that two students have been offered permanent federal employment.

Christopher Black, a sophomore attending Dover-Sherborn High School, was one of the 10 who participated in the program last summer. He evaluated the effectiveness of cooling the Small Tactical Airbeam Tent (STAT) with a Field Deployable Environmental Control Unit, under the mentorship of Claudia Quigley, a mechanical engineer in the Collective Protection Directorate. He also examined the effect of the STAT liner and plenum on heating, ventilation and air conditioning (HVAC) efficiency. Black's observations and recommendations will be used to help improve HVAC performance and to optimize the plenum airflow efficiency. In addition to completing his research project, Black designed and installed a mounting assembly for a solar-powered fan in the STAT.

"Chris provided valuable insight on how to improve the plenum design in the STAT and was a welcome addition to our team for the summer," noted Quigley. "Chris's enthusiasm was contagious. I highly recommend participation in the SEAP for students interested in the sciences or engineering."

Fan Improves Heater Performance and Tent Comfort

At first glance, the self-powered Thermoelectric Fan used with the Army's Family of Space Heaters may appear to be a high-priced air mover. However, when used with non-electric space heaters, the fan/tent heater combination is the most inexpensive option available to Army units for temporary space heating, costing several thousand dollars less than electric-powered forced hot air systems.

The fan was conceived and developed by the Product Manager Force Sustainment Systems Shelters Team at the U.S. Army Soldier Systems Center, Natick, MA, as an important accessory to space heaters that operate on liquid or solid fuel. Manufactured by Aspen Systems Inc., Marlborough, MA, for uninsulated structures such as tents and barracks, the fan ensures that heated air is circulated downward creating even heat distribution within the structure.

Testing conducted in the Soldier Systems Center arctic chamber at minus 60 degrees F showed that the fan can increase

the temperature 1 foot off the floor by more than 20 degrees F. This is important because soldiers sleep on or near the floor, and the most difficult parts to keep warm are the feet.

"With the fan, we can have the stove barely on and it will warm you throughout the tent, whereas before you had to be right on the stove to stay warm, and your backside was still cold," said SSG Chris Harder at Fort Gordon, GA. "I wish I had these in my unit over in Korea. It would make a huge change in wintertime comfort."

When placed on a heater surface, the self-powered fan converts a small amount of heat energy directly into electricity to drive the fan's impeller. It improves the heater's performance by creating warmth throughout a larger area with the same fuel consumption, or it can heat the same area with less fuel. Reduced fuel consumption, primarily JP-8 or diesel, is an important advantage because fuel must be transported along with the field unit, costing the Army as much as \$12-\$20 per gallon.

"Logistic fuel is considerably more important than ammunition at every point along the battlefield except at the leading edge of the fighting, and even there fuel is more valued from time-to-time," explained GEN Paul J. Kern, U.S. Army Materiel Command Commander, speaking at the Society of Automotive Engineers World Congress in March 2003.

Fuel use is critical to the Army because fueling stations are often remote in combat zones. In cold climates, the Army has estimated that a single fan can save as much as 320 gallons of heating oil in one heating season. Actual results depend on the local climate and annual "degree-days," which is the difference between 65 degrees F and the day's average temperature.

Since the fan's introduction in 2000, the Defense Logistics Agency (DLA) has received orders for more than 6,000 fans. Units can purchase the fan, currently priced at \$590, through the DLA Web site at www.dscp.dla.mil or order it through the MILSTRIP system.

For more information about the Soldier Systems Center, go to <http://www.natick.army.mil>.

Did You Know?

Did you know that the U.S. Army Acquisition Support Center has a new Web site address that is more recognizable and user-friendly? Check it out at <http://asc.army.mil>.

New Fibers Could Lighten Body Armor

Two new fibers are vying to replace the respected but heavier Kevlar, the staple of body armor for decades, as the Army strives to enhance mobility by reducing Soldier loads.

Body armor is one of the more riveting individual equipment successes, especially from the ongoing conflicts in Afghanistan and Iraq, with reports of dozens of saved lives directly attributed to the bullet and shrapnel-halting ability of the helmet, flexible vest and rigid chest plate worn by troops.

However, body armor ranks with water, ammunition and weapons as the heaviest items worn or carried by troops, according to engineers on the Ballistics Technology Team at the U.S. Army Soldier Systems Center in Natick, MA. "The Army is putting the best available materials into Soldiers' armor," said Philip Cuniff, a research mechanical engineer. "Part of our work in the Ballistics Technology Team is to develop new materials and techniques to lighten the load of those armor systems."

Body armor technology has advanced in the past century to protect the head and torso against high-velocity handgun bullets and fragmenting munitions, such as those from artillery shells, mortar shells, mines and grenades. Lightweight small-arms protection is also available for the torso.

The nylon "flak" vest for ground troops and steel helmet from the 1960s were replaced by Kevlar vests and helmets during the 1980s in a product called Personnel Armor System, Ground Troops (PASGT). Performance increased with PASGT, but weight remained about the same, according to Cuniff.

The next major change was in the 1990s with an improved version of Kevlar that helped lighten the vest by 25 percent and increased ballistic protection.

The Ballistic Technology Team's objective is to reduce the weight again by 25-30 percent, without losing performance. Zylon and M5 fibers show potential in meeting or exceeding that goal. Zylon, a commercially available fiber first developed by the Air Force in the 1980s and now produced in Japan, turned in a solid performance in testing, said Cuniff. A prototype helmet made last year with Zylon was developed as part of the Human Systems Defense Technology Objective for Ballistic Protection for Improved Survivability. The Zylon helmet weighs 1.79 pounds vs. 3 pounds for the PASGT at the same

protection levels. Cuniff said two possible roadblocks with Zylon are environmental degradation and the law requiring certain military products to be manufactured in the United States with domestic materials. Zylon has shown to break down with exposure to light, high heat and humidity, but there may be solutions to these problems, Cuniff said.

An alternative material to Zylon is M5, an ultra-high performance fiber developed by Magellan Systems International in Bethesda, MD. According to Cuniff's mathematical model for impact performance estimation based on the mechanical properties of armor materials, M5 appeared to provide exceptional impact performance. The model indicated that M5 could cut weight by at least 35 percent compared to currently available fragmentation armor at the same protection level. So far, the ballistic impact test results with a limited, relatively low-strength sample of M5 are glowing.

"We shot it, and it came out better than we expected," Cuniff said. "We found there was something wrong with the model; we underpredicted the performance of the material. Of everything we looked at, it looks like M5 will be a really big improvement in reducing the weight of armor." Another feature of M5 fiber is excellent thermal and flame protection. Besides helmets, fragmentation vests and composites for use in conjunction with ceramic materials for small arms protective plates, M5 fiber could also be used for structural composites for vehicles and aircraft.

"The military market for ballistic material is cyclic," Cuniff said. "The beauty of this fiber is that it should have a lot of other markets when Army demand falls. We're hoping it becomes cost-competitive to Kevlar."

The plan is to acquire sufficient quantities of M5 fiber by next fall to make a prototype helmet, vest and small-arms protective plate. "Then we can find out how well high-strength M5 performs and find out what kind of armor we can develop for Objective Force Warrior and the Army," Cuniff said.

Air Force's Scott Becomes DCMA Director

U.S. Air Force BG Darryl A. Scott has been selected as Director, Defense Contract Management Agency (DCMA), succeeding Army BG Edward M. Harrington, who retired after 33 years of distinguished military service.

As DCMA Director, Scott is the senior contract manager responsible for ensuring that DOD acquisition programs, supplies and services are delivered on time, within cost and at acceptable levels of performance. This involves management of 360,000 prime contracts with current work valued at \$900 billion.

"I plan to build on DCMA's outstanding record of first-rate customer service, improved business processes and excellent performance from its 10,000 personnel," Scott said. "My job will be to ensure that our nation's warfighters get the very best weapons, components and spare parts; that the taxpayers get the most for their investment and that our DCMA teammates are empowered to perform to the maximum of their abilities."

Scott's most recent assignment was as the Vice Commander, Warner Robins Air Logistics Center, Air Force Material Command, Robins Air Force Base (AFB), GA, the largest single-site industrial complex in Georgia.

Scott also served as the Deputy Assistant Secretary for Contracting, Office of the Assistant Secretary of the Air Force for Acquisition in the Pentagon.

Scott holds a master's degree in logistics management, with distinction from the Air Force Institute of Technology Graduate School of Systems and Logistics, Wright-Patterson AFB, OH. He is a distinguished graduate of the Air Command and Staff College, Maxwell AFB, GA, and a distinguished graduate of the Industrial College of the Armed Forces, Fort McNair, Washington, DC.

ASC's MAJ Michelle Nassar Awarded the Bronze Star Medal

MAJ Michelle Nassar was recently awarded the Bronze Star Medal for exceptionally meritorious achievement while serving as the Headquarters Commandant for the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Southwest Asia Operations Center under the Army Materiel Command during *Operation Iraqi Freedom*. Nassar distinguished herself through exceptional leadership in providing superior administrative and logistics support for nearly 500 military, Department of the Army civilian and contractor personnel.

Nassar became the common voice that the acquisition community relied on to operate in theater. She specifically coordinated the efforts of 12 different program executive offices (PEOs) responsible for developing and fielding all of the Army's equipment and systems to include vehicles, helicopters, ammunition, command and control (C2) systems, intelligence systems, robotics, unmanned aerial vehicles, information systems and numerous other critical systems that deployed forces needed daily. Nassar established support operations for this body of

forces that allowed them to operate quickly and efficiently. She was directly responsible for coordinating with the ASAALT Staff at Camp Doha and various PEOs in accounting for contractors on the battlefield and assuring that all assigned personnel had the correct tactical equipment, shots, passports, visas, clothing and supplies to survive in the harsh desert environment.

Nassar also consolidated numerous technical and administrative data for official reports that were passed back to the Army Staff (ARSTAFF) and Army Chief of Staff. She quickly assimilated data and passed on issues that needed immediate reconciliation. Nassar's direct coordination with the ARSTAFF ensured critical supplies and equipment were delivered to the Coalition Forces Land Component Command (CFLCC) throughout the area of operations. She was the direct liaison between the Army G-6 Information Office and the CFLCC G-6 and G-3 offices to coordinate all elements of hardware and software interfaces and contractor support to the Command Centers at Camp Doha and Camp Arifjan.

Nassar also worked with security and networking personnel to install the satellite hub providing situational awareness (SA) data and C2 information to the combatant commanders. She



COL Mary Fuller, Director, U.S. Army Acquisition Support Center (ASC), presents the Bronze Star Medal to MAJ Michelle Nassar, ASC Operations Officer, for exceptionally meritorious achievement while assigned to the ASAALT Southwest Asia Operations Center during *Operation Iraqi Freedom*.

was directly responsible for establishing funding accounts at Camp Doha and then personally wrote numerous contracts to maintain the Special Projects Office/ASAALT facilities on Avenue M. She also contracted for several work sites at outlying camps to facilitate the installation of Blue Force Tracking to enhance battlefield SA. Nassar deployed into Iraq to ensure critical parts and equipment were promptly received by the command as it began fielding Blue Force Tracking. Her support to combatant commanders was immeasurable and was key to the organization's success and the Soldiers who relied on the products and services Nassar delivered.

CONFERENCES

TACOM/Industry Logistics Symposium

The 13th annual U.S. Army Tank-automotive and Armaments (TACOM)/Industry Logistics Symposium will be held March 16-18, 2004, at the Hyatt Regency hotel in Dearborn, MI. This logistics symposium brings together government and industry personnel to discuss issues and concerns relevant to the constant changes in the logistics environment. The symposium will offer formal presentations, workshops, exhibits, demonstrations and open discussions and will emphasize how logistics contributes to transforming the Armed Forces. Symposium speakers will discuss logistics transformation, lean logistics, recapitalization and Army transformation. Speakers will also discuss the impact of logistics on Homeland Defense, U.S. Joint Forces in combat, technology development, logistics support to *Operation Iraqi Freedom*, Future Combat Systems, sense-and-respond logistics and resetting the Army structure back to pre-war conditions. For additional information on the symposium, contact Cherice Carter, TACOM Symposium Chairperson, at (586) 574-4175, or go to the National Defense Industrial Association (NDIA) Web site at <http://www.ndia.org>.

TARDEC to Host Ground Vehicle Survivability Symposium

The 15th Annual Ground Vehicle Survivability Symposium (GVSS) will be held March 29-April 1, 2004, at the Naval Postgraduate School, Monterey, CA. The symposium is being held under the auspices and sponsorship of the Survivability Technology Area, U.S. Army Tank Automotive and Armaments Command Research, Development and Engineering Center (TARDEC). The GVSS is held annually to provide a forum to discuss, exchange and debate accomplishments, discoveries and issues in all ground vehicle survivability areas.

This year's symposium will provide a setting to discuss the implications of survivability technology focusing primarily on the Unit of Action Future Combat Systems and lessons learned in Iraq. The conference is classified up to and including SECRET U.S. ONLY. For more information, contact Joe Moravec, Booz Allen Hamilton, at (586) 978-3106.

5th Joint Service Chemical and Biological Decontamination Conference

The Joint Program Manager for Decontamination and the Defense Threat Reduction Agency are hosting the 5th Joint Service Chemical and Biological Decontamination Conference (DECON 2004) May 17-20, 2004, at the Westin Innisbrook Golf Resort, Palm Harbor, FL. The conference provides a forum for dialogue between civil and federal government, industry, academia, foreign representatives and first responders on critical decontamination issues on the battlefield, at fixed sites and in our communities.

Conference attendance is open to all members of the scientific and industrial decontamination community. Attendees can register online at <https://www.enstg.com/Signup>. Enter the Conference Code: 5TH23624.

For more information on DECON 2004, contact the conference coordinator by phone at (410) 612-8247 or by e-mail at bilotto_deborah@bah.com.